

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code:3171922

Date:18-11-2025

Subject Name:Automation in Manufacturing

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) List merits and demerits of automations is Production systems.	03
	(b) Interpret Modular automations and its applications.	04
	(c) Explain Ten Strategies for Automation and Process Improvement.	07
Q.2	(a) Explain group technology with a suitable example.	03
	(b) Define key machine and differentiate between group technology and cellular manufacturing.	04
	(c) Explain part classification and coding system used in group technology.	07
	OR	
	(c) Explain 'Opitz Coding System' with suitable example.	07
Q.3	(a) What is AGV? Explain the working principle of AGVs.	03
	(b) Explain the types of flexibilities in FMS. State the factors on which these flexibilities depends.	04
	(c) Illustrate types of FMS and its component with a sketch.	07
	OR	
Q.3	(a) Explain the different application of pneumatic and hydraulic systems used in Automation.	03
	(b) Explain basic components used in hydraulic & pneumatic automation system.	04
	(c) Explain AGVs associated with FMS.	07
Q.4	(a) Differentiate between End effectors and Manipulators used in robot.	03
	(b) Explain in brief automated transfer machine and it's application.	04
	(c) Describe about industrial Robot in detail.	07
	OR	
Q.4	(a) List the robot configurations.	03
	(b) Explain advantages, limitations and application of robot.	04
	(c) Explain various elements of CMM in brief.	07
Q.5	(a) What is Modular Automation?	03
	(b) Explain effect of automation on economy.	04
	(c) Elaborate in depth about Robot control system.	07
	OR	
Q.5	(a) Define following terms: Transducers, Sensors and Actuators	03
	(b) Why does automation need in foundry shops?	04
	(c) Explain Scope of automation in Indian Industries.	07